

**INTERFACE TRANSMIT CIRCUITS FOR MODULARIZED DATA**  
**OPTIMIZATION ENGINES AND METHODS THEREFOR**

ABSTRACT

5           A data optimization engine for optimizing selected frames of a first stream of data. The data optimization engine includes a transmit interface circuit coupled to an optimization processor, the transmit interface circuit being configured for receiving the first stream of data. The transmit interface circuit includes a traffic controller circuit for separating frames in the first stream of data into a first optimizable frame  
10   and a first non-optimizable frame, and an optimization front-end circuit coupled to the traffic controller circuit to receive at least a first portion of the first optimizable frame. The optimization front-end circuit includes a protocol conversion circuit configured to convert data in the first portion of the first optimizable frame from a first protocol to a second protocol suitable for processing by the optimization processor, the first  
15   protocol specifies a first word length, the second protocol specifies a second word length different from the first word length. The optimization front-end circuit further includes an end-of-optimization-file processing circuit, the end-of-optimization-file processing circuit flagging an end of the first portion of the first optimizable frame to the optimization processor, wherein the optimization processor is configured to  
20   optimize the first portion of the first optimizable frame by performing at least one of compression and encryption on the first portion of the first optimizable frame.